UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Robert E. Higashi et al.
Serial No.: 10/750,581
Filed: December 29, 2003
For: MICRO FUEL CELL
Docket No.: H0005015-1100.1237101

Confirmation No.: 8573
Examiner: Alix Echelmeyer
Group Art Unit: 1745

DECLARATION UNDER 37 C.F.R. § 1.131

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE FOR ELECTRONIC TRANSMISSION:
The undersigned hereby certifies that this paper or papers, as described herein, are being electronically transmitted to the U.S. Patent and Trademark Office on this 11th day of March 2010.

By Lynn Thompson
Lynn Thompson

We, Robert E. Higashi, Khanh Q. Nguyen, Karen M. Newstrom-Peitso, Tom R. Rezachek, and Roland A. Wood, as the inventors of the claimed invention of the above-identified application, declare as follows:

This Declaration is to establish completion of the invention in the above-identified application in the United States at a date prior to April 30, 2003.

Facts and Documentary Evidence

All work on the invention included in the above-identified application was completed in the United States.

The invention of the above-identified patent application was completed prior to April 30, 2003. As evidence of this, attached hereto as Exhibit 1 is a true and accurate copy of Honeywell Invention Disclosure Number "H0005015", entitled "Low Cost Micro-Fuel Cell", with only the dates removed. From the dates set forth on Honeywell Invention Disclosure Number

"H0005015" (which have been redacted from the attached copy), I can tell that this Invention Disclosure Record was prepared and submitted prior to April 30, 2003. The Invention Disclosure Record shows that the invention of the above-identified patent application was completed prior to April 30, 2003.

We hereby declare that all statements made herein are of my own knowledge and are true and all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Respectfully submitted,

Date: 7-15-09

Robert E. Higashi

Date: 7-15-09

Khanh Q. Nguyen

Date: 7-15-09

Karen M. Newstrom-Peitso

Date: 7/21/09

Tom M Rezachek

Date: _____

Roland A. Wood

"H0005015" (which have been redacted from the attached copy), I can tell that this Invention Disclosure Record was prepared and submitted prior to April 30, 2003. The Invention Disclosure Record shows that the invention of the above-identified patent application was completed prior to April 30, 2003.

We hereby declare that all statements made herein are of my own knowledge and are true and all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Respectfully submitted,

Date: _____

Robert E. Higashi

Date: _____

Khanh Q. Nguyen

Date: _____

Karen M. Newstrom-Peitso

Date: _____

Tom R. Rezachek

Date: July 23rd 2009

Roland A. Wood

EXHIBIT 1

Honeywell CONFIDENTIAL
ATTORNEY-CLIENT PRIVILEGED

Invention Record (Docket) No.: H0005015

Origin Date:

SBE: **0760 - ACS - Advanced Technology Labs**

Attorney(s): **Fredrick, Kris T**

File Location: **GV - Golden Valley, MN**

Title: **Low cost micro-fuel cell**

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SSN: **********
County: **Hennepin**
Supervisor: **Cleopatra Cabuz**

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SSN: **********
County: **Hennepin**
Supervisor: **Cleo Cabuz**

Inventor: **Newstrom-Peitso, Karen M.**
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SSN: **********
County: **Hennepin**
Supervisor: **Cleo Cabuz**

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SSN: **********
County: **county**
Supervisor: **arch**

Inventor: **Wood, Roland A**
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Phone: **763-954-2799** Fax: **763-954- 2504**
Citizenship: **USA**

SSN: **********
County: **Hennepin**
Supervisor: **C. Cabuz**

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1. Briefly describe the technical or commercial problem or need that this invention is intended to solve.
There are many applications requiring low power, long life, small size power sources such as wireless sensors. Simple batteries work well, are only rated for a 5 year life. Fuel cells are well suited for these markets, but most emphasis has been on making large cells, and in general fabrication costs of large devices has been high.

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2. Briefly describe how this invention solves the problem or meets the need.
This device would be easily fabricated in roll-to-roll or large sheet batch methods for low cost and could be combined with powder/water hydrogen sources to produce electrical power.

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3. Describe how to make and use the invention. Please indicate which embodiment(s) are preferred and describe the best way known to you to practice the invention. Attach relevant documents. (If the invention is a device or process, please provide a drawing or flow chart.) (If you are unfamiliar with the contents and preparation of a patent application, please refer to the Guidelines for the Preparation of Invention Disclosures.
Four embodiments of how to make the device are illustrated in the attachment
Document(s):
H0005015_MU1_January 17-fuel cell meeting notes.doc

4(a). To the best of your recollection what is the earliest date on which the invention was conceived? Who

conceived the invention? Attach documents which evidence the foregoing.

Conception Date: Who conceived it?: **Tom Rezachek, Andrew Wood, Karen Newstrom-Peitso,**
Document(s):

4(b). Is there a non-inventor who witnessed the conception? If so, please identify him/her and attach any documents which evidence the witnessing.
no
Witness Name: Witness Phone: First Practice Documents:

5(a). To the best of your recollection, what is the earliest date on which the invention was reduced to practice (i.e. made)? Who reduced the invention to practice. Attach documents which evidence the foregoing. If no reduction to practice, type "n/a".
First Practice Documents:
First Practice Date: **n/a** Who reduced it to practice?:

5(b). Is there a non-inventor who corroborated the reduction to practice? If so, please identify him/her, the corroborating activity (i.e., over-the-shoulder corroboration or repeating the experiment), and the date of the activity. Attach documents which evidence the foregoing.

Non-inventor corroborator?: **no**
First Corroborator Name:
First Corroborator Phone:
First Practice Corroboration Date:
First Practice Corroborator Activity:
Document(s) related to corroboration event:

5(c). For each example of the invention and each comparative example on which you intend to rely in the patent application, please indicate when the example was generated, who conducted the experiment and where this example is recorded (e.g., volume, page and author or laboratory notebook) and attach a copy of these records. If no example available, type "n/a".
Example(s):

Example Date:
Who conducted the experiment?:
Where is example recorded?:

6(a). Did this invention arise in a program that is funded in whole or part by the U.S. Government or another company, or any entity other than Honeywell?
Yes

6(b). If so, please identify the program (including government contract number, if applicable) and the entity sponsoring the program and provide a copy of any agreement between the parties concerning the program.

Outside Funding Program: **AMPGEN**
Contract Number *(if applicable)*: **F33615-01-2171**
Outside Funding Entity: **DARPA**
Document(s) related to funding agreement:

7(a). To your knowledge, is this invention subject to any agreement between Honeywell and a third party (e.g., a secrecy agreement, license agreement, joint development agreement, etc.)?

no

7(b). If so, please identify the agreement and the other party and attach a copy of the agreement if one is available.
Third party agreement ID:
Third party name:
Document(s) related to any third party agreement:

---

8. You have a duty to disclose to the U.S. Patent and Trademark Office all relevant prior art of which you are aware. Please list all such prior art (e.g., patents, publications, brochures, Honeywell and third-party products) known to you. If a prior art search has been conducted, it must be included. Briefly indicate how this invention is different from the prior art. See 1 and 2 above.
List of prior art:

How invention is different from the prior art:

9(a). Has the product or process which is the subject of this invention disclosure been disclosed, sold or offered for sale to anyone outside of Honeywell or to the general public.
no

9(b). If so, when and to whom was it disclosed, sold or offered for sale? If it was disclosed, was a secrecy agreement in place? Attach documents which evidence the sale or offer for sale.

Date it was disclosed:
Whom disclosed to:
Disclosure Sales Agreement?:
Document(s) which evidence the sale or offer for sale:

9(c). Does the business intend to disclose, sell or offer to sell the invention to anyone outside of Honeywell or to the general public in the near future? If so, to whom and when is this disclosure, sale or offer for sale planned?

For whom are future sales planned:
Date future sale is planned:

10(a). Does this invention relate to any other: (i) issued patents, (ii) pending patent applications, or (iii) previously submitted invention disclosures, of Honeywell?

10(b). If so, please identify the related matter and indicate whether this is an improvement on an earlier invention: Other patents related matter is:

Is this an improvement?:

---

11. Please specify the product(s) to which this invention disclosure relates.

---

12. Please indicate keywords for identifying this invention disclosure.

Witness **Inventor**

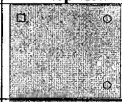
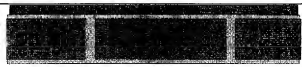
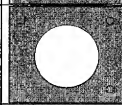
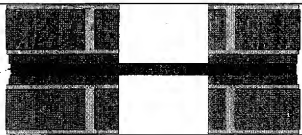
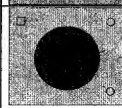
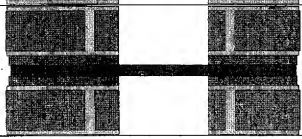
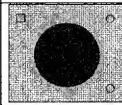
Name: _____	**Name:** _____
Witness Signature: _____	**Inventor Signature:** _____
Date: _____	**Date:** _____
Inventor Name: _____	**Inventor Name:** _____
Inventor Signature: _____	**Inventor Signature:** _____
Date: _____	**Date:** _____
Inventor Name: _____	**Inventor Name:** _____
Inventor Signature: _____	**Inventor Signature:** _____
Date: _____	**Date:** _____
Inventor Name: _____	**Inventor Name:** _____
Inventor Signature: _____	**Inventor Signature:** _____
Date: _____	**Date:** _____

Send to:
Kris T Fredrick
1985 Douglas Drive N.
Golden Valley, MN 55422-3992
The attorney assigned to this disclosure.

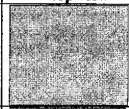
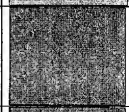
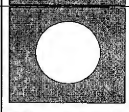
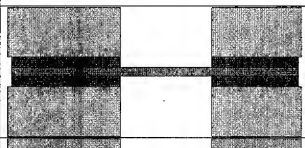
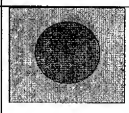
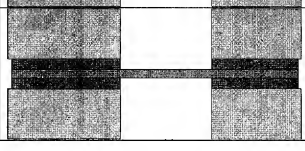
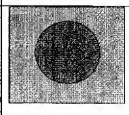
Tom, Andrew, Karen, Khanh and Barry:

Here is a summary of the outputs of our design/process meeting today and some follow up discussions. Four process options were created which should result in very low production cost miniature fuel cells.

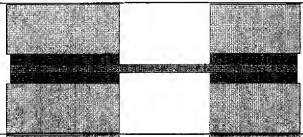
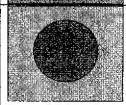
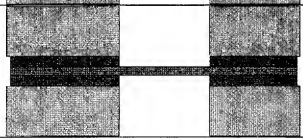
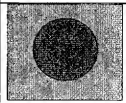
Process 1: Flexcircuit-A

Process Step	side view	top view
metallized kapton with feedthrough contacts		
apply conductive adhesive in soft-cure state		
Laser machine openings through stack to complete electrode sheet.		
Laminate PEM between two sheets of finished		
Dice fuel cells by laser or physical cutting (shears)		

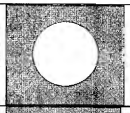
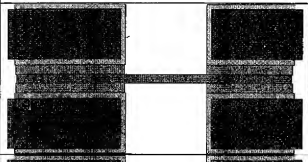
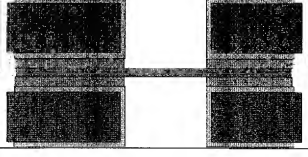
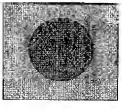
Process 2: Foil-A

Process Step	side view	top view
metal foil (lead frame?) like gold plated kapton		
Apply ~~conductive~~ adhesive		
Laser machine holes through adhesive & substrate to complete electrode sheet		
Laminate PEM between two sheets of finished electrodes		
Dice fuel cells by laser or physical cutting (shears)		

Process 3: Foil-B

Process Step	side view	top view
metal foil (lead frame?) with punched holes		
Roller application of conductive adhesive		
Laminate PEM between two sheets of finished electrodes		
Dice fuel cells by laser or physical cutting (shears)		

Process 4: Flexcircuit- B

Process Step	side view	top view
Get kapton with large hole cut and feedthrough contact "plated"		
Roller application of conductive adhesive		
Laminate PEM between two sheets of finished electrodes		
Dice fuel cells by laser or physical cutting (shears)		

These four techniques constitute some of the ways in which batch, roll to roll fuel cell fabrication might be addressed.

Contributors to this discussion include:
Tom Rezachek, Andrew Wood, Khanh Nguyen, Karen Newstrom, Bob Higashi and Barry Cole. Steve Eickhoff was present in the meeting, but I'm not sure if he contributed.